

Rare Species Inventory

Source: J. Sovell,
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PROJECT SUMMARY

Introduction and Background

Sand Creek Massacre National Historic Site (NHS) was established in 2007, in part to preserve and protect the cultural landscape of the massacre. Protection of native biological resources is integral to preserving the cultural landscape. Sand Creek Massacre NHS is primarily composed of shortgrass prairie and sage shrubland; Big Sandy Creek, an intermittent stream, crosses the site. Shortgrass prairies support federal and state listed endangered, threatened, and candidate species. Identification of special-status species in the site is necessary to the development of management plans, particularly species of concern that are responsive to grazing practices, including lack of grazing.

In 2006, Colorado State University and the Colorado Natural Heritage Network assessed the rare species in Sand Creek Massacre NHS for the National Park Service and Southern Plains Inventory and Monitoring Network. The study's purpose was to determine the occurrence of special-status and



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Northern Leopard Frog (*Rana pipiens*)

candidate species in the site. Species that have adapted to the specific set of conditions of their environment can be indicators of the health of an ecosystem, which can be impacted by water availability, temperature, elevation, geology, and land use. Objectives were to determine the presence, relative abundance, and condition, of nine priority species.

Methods

Sampling protocols were developed to maximize the potential of observing each target species. Surveys were conducted between May and September.

Swift fox (*Vulpes velox*). Researchers conducted surveys for active and inactive dens in suitable habitat—shortgrass prairie without shrubs—between May and July when dens would be more obvious because pups would be above ground. Dens were documented and differentiated from other burrowing species by identifying nearby tracks and the size and shape of the entrance. Nighttime spotlighting for carnivore species was conducted in June and July.

Arkansas darter (*Etheostoma cragini*). Surveyors conducted sampling for the Arkansas darter in May and June in the ponds, pools, and backwaters along Big Sandy Creek and its tributaries. Fish were collected using dip nets and handheld seines or large vertical fishnets that float at the top and are weighted at the bottom. Each fish was identified and documented including physical data, photographed, and released.

Black-tailed prairie dog (*Cynomys ludovicianus*). Researchers



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Burrowing Owl (*Athene cunicularia*)



Bleached skimmer (*Libellula composita*)

used a black-tailed prairie dog monitoring protocol developed for seven national parks to determine the abundance of the species. Visual counts of prairie dogs were conducted in June, 24 hours after observational plots were established to allow prairie dogs to return to normal behavior.

Lesser-prairie chicken (*Tympanuchus pallidicinctus*). Auditory and visual surveys were conducted to detect lesser prairie chicken leks, the gathering of males to attract females for breeding. Sampling was conducted in May and June in suitable weather. Listening stops were conducted along the survey routes.

Plains ambrosia (*Ambrosia linearis*). Targeted searches were conducted in suitable habitat, which typically includes open, sandy, and sparsely vegetated areas. Surveys were conducted in September for plants in fruit.

Mountain plover (*Charadrius montanus*). Surveys were conducted in May and June during the breeding season when mountain plovers are tending nests and territories and are most likely to be detected. Observations occurred during suitable weather and in the morning when it is easier to see the white breast of adults. Researchers drove to areas of low grasses and prairie dog towns and confirmed sightings with binoculars and spotting scopes from a stationary vehicle. Plovers did not appear to be wary of vehicles.

Ferruginous hawk (*Buteo regalis*). Ferruginous hawks, common winter residents in eastern Colorado, were surveyed along roads which are present in nearly all of the suitable habitat in Sand Creek Massacre NHS. Surveyors hiked areas that were unobservable from roads. Surveys were conducted between May and July.

Burrowing owl (*Athene cunicularia*). Burrowing owls typi-

cally use burrows made by animals. In eastern Colorado, they are most closely associated with prairie dog towns. Researchers surveyed prairie dog towns in May, when owls were expected to establish nest burrows, and in June, when young were expected to be visible above ground. Occupancy of suitable habitat can be documented by the observation of at least one owl and also molted feathers, cast pellets, prey remains, eggshell fragments, and excrement near a burrow entrance as burrowing owls reuse nests year-to-year. Observations were also documented during other species surveys.

Texas horned lizard (*Phrynosoma cornutum*). Visual surveys were conducted during June and July in prairie dog towns where broken shortgrass prairie with ample bare ground provide suitable habitat for the Texas horned lizard. Surveyors recorded observations of the lizard and lizard remains, scat, and track patterns.

Results and Discussion

Researchers documented 11 special-status species, including species listed by the State of Colorado, federal agencies, and conservation organizations. Though extensive surveys were conducted for the nine targeted species, only the burrowing owl, mountain plover, and black-tailed prairie dog were observed. Others species of conservation concern documented were Swainson's hawk (*Buteo swainsoni*), scaled quail (*Callipepla squamata*), northern harrier (*Circus cyaneus*), loggerhead shrike (*Lanius ludovicianus*), bleached skimmer dragonfly (*Libellula composita*), red-headed woodpecker (*Melanerpes erythrocephalus*), white-faced ibis (*Plegadis chilis*), and northern leopard frog (*Rana pipiens*).

Suitable lesser prairie chicken leking sites occur in the area, though the species was not observed. Lesser prairie chickens historically occupied Sand Creek Massacre NHS, though the species may be extirpated from the site and the immediate area. Survey recommendations include evaluating Sand Creek Massacre NHS for suitability as a translocation site.

Literature Cited

Sovell, J. 2006. Rare species inventory of Sand Creek Massacre National Historic Site. Draft interim report (Year 1, 2006.). Ft. Collins, CO: Colorado Natural Heritage Program, Colorado State University.

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